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ABSTRACT

This collection of learning activities is intended for use in reinforcing mathematics instruction as it relates to the metal trades. Fifty activity sheets are provided. These are organized into units on the following topics: numeration, adding whole numbers, subtracting whole numbers, multiplying whole numbers, dividing whole numbers, factoring, fractions, decimals, percents, measurement, and time and pay. A variety of activities are provided, including exercises in spelling numbers correctly, arithmetic exercises, word problems, and practice in working with geometric figures and interpreting charts. Vocabulary words taken from the metal trades are incorporated into the activities. Answers to each activity are also provided. (MN)

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MATH LEARNING ACTIVITY PACKET

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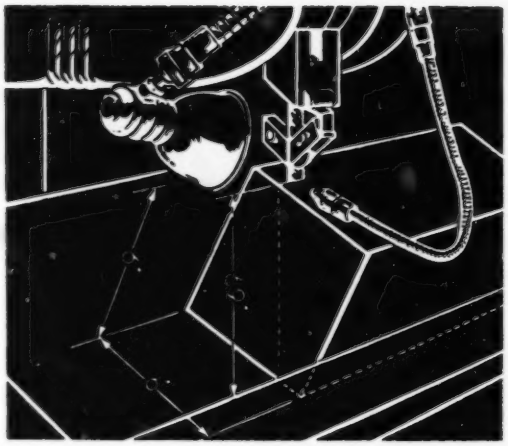

METAL TRADES

Prepared by Shelia I. Grant

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CE045229

OCCUPATIONAL CURRICULUM LAB (L) EAST TEXAS STATE UNIVERSITY

First Edition

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NOTE TO THE INSTRUCTOR

The following Learning Activity Sheets have been developed for Metal Trades. These Learning Activity Sheets relate directly to each unit of the Self-Contained Math Manual developed by the Occupational Curriculum Laboratory at East Texas State University.

Instructors are encouraged to use these activities to reinforce instruction in the area of math as it relates to the students' individual trade areas.

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METAL TRADES

LEARNING ACTIVITY SHEETS

ANSWERS

LEARNING ACTIVITY SHEET 1

1. five hundred eighty-two steel pipes
2. one hundred nineteen coils of wire
3. seventy-three meters
4. six thousand twenty-four sheets of metal
5. three hundred seventy-six elbows
6. nine hundred eleven drills
7. four hundred twenty-eight driver pulleys
8. one hundred one drip pans
9. fifty-two thousand nine hundred seventy-three rivets
10. seventeen thousand two hundred thirty-eight brackets
11. 352 pieces of angle iron
12. 1,602 flathead rivets
13. 75 strips of black iron
14. 113 coils of copper wire
15. 56 pulleys
16. 11 gages
17. 702 bars of solder
18. 393 sheets of metal
19. 5,205 files
20. 39 sheets of tin plate

LEARNING ACTIVITY SHEET 2

1. 4,216 sheets of metal
2. 63 elbows
3. 125 coils of wire
4. 1,290,835 rivets
5. 1,004 pipes
6. 1,360 sheets of tin plate
7. 5,304 brackets
8. 1,810 inches of steel
9. 46 feet of copper wire
10. 43,825 driver pulleys

LEARNING ACTIVITY SHEET 3

1. 4,429 sheets
2. 106 inches
3. 55 feet
4. 726 inches
5. 439 bars
6. 11,275 rivets
7. 625 feet
8. 166 brackets
9. 117 pipes
10. 505 sheets of tin plate

LEARNING ACTIVITY SHEET 4

1. 274 sheets of metal
2. 4,897 driver pulleys
3. 75 feet of copper wire
4. 143 inches of steel
5. 31,139 brackets
6. 213 sheets of tin plate
7. 64 pipes
8. 29,605 rivets
9. 76 coils of wire
10. 159 elbows

LEARNING ACTIVITY SHEET 5

1. 4,591 sheets
2. 18 inches
3. 3"
4. 51 feet
5. 861 bar stocks
6. 32 feet
7. 175 inches
8. $1,439
9. 251 pulleys
10. 221 sheets of metal

LEARNING ACTIVITY SHEET 6

1. 7,448 inches of steel
2. 156 driver pulleys
3. 1,176 feet of copper wire
4. 3,297,580 rivets
5. 4,400 sheets of metal
6. 183,616 brackets
7. 9,120 rivets
8. 1,752 pipes
9. 275 drip pans
10. 4,320 drills

LEARNING ACTIVITY SHEET 7

1. 675 pipes
2. $208.00
3. 549 inches
4. $12,272.00
5. 2325 sheets of metal
6. 240 pipes
7. 608 inches
8. 72 rivets
9. $90.00
10. $112.00

LEARNING ACTIVITY SHEET 8

1. 3 feet of copper wire
2. 74 inches of steel
3. 25 driver pulleys
4. 2,103 rivets
5. 26 brackets
6. 59 sheets of metal
7. 215 round pipes
8. 13 feet of copper wire
9. 7 drills
10. 13 coils of wire

LEARNING ACTIVITY SHEET 9

1. 29 sheets
2. $15.00
3. 9 bundles
4. 17 pieces
5. $8.00 per pound

LEARNING ACTIVITY SHEET 10

1. 3 inches
2. $38.00
3. 15 elbows
4. 16 pounds
5. $72.00
6. 69 steel rods
7. 7 inches

LEARNING ACTIVITY SHEET 11

1. 18
2. 42
3. 24
4. 12
5. 10
6. 24 drills
7. 20 sheets of metal
8. 72 rivets

LEARNING ACTIVITY SHEET 12

1. (1, 2, 4, 8, 16, 32)
2. (1, 2, 4, 5, 10, 20, 25, 50, 100)
3. (1, 2, 3, 6)
4. (1, 2, 3, 4, 6, 9, 12, 18, 36)
5. (1, 2, 5, 10)
6. (1, 2, 3, 6, 9, 18)
7. (1, 2, 5, 10, 25, 50)
8. (1, 2, 3, 4, 6, 8, 12, 24)
9. (1, 2, 4, 8)
10. (1, 2, 3, 6, 7, 14, 21, 42)

LEARNING ACTIVITY SHEET 13

1. 5
2. 3
3. 4
4. 4
5. 3
6. 6 students
7. 8 sheets of metal
8. 2 pipes
9. 4 drills
10. 4 elbows

LEARNING ACTIVITY SHEET 14

1. 84 ft. of wire
2. 66 inches thick
3. 39 inches
4. $77.00
5. 24 feet
6. 338 square inches
7. 13,555 rivets
8. $144.00 per week; $24.00 per day
9. 12 sheets
10. $546.00

LEARNING ACTIVITY SHEET 15

1. a. 1
   b. 6
   c. 1/6

2. Evaluated to the satisfaction of the instructor.

LEARNING ACTIVITY SHEET 16

1. a. 3/5
   b. 4/7
   c. 15/16

2. a. ten-fourteenths
   b. seven-twelfths
   c. six eighteenths

3. a. 1/4
   b. 1/16
   c. 1/2

LEARNING ACTIVITY SHEET 17

1. <
2. >
3. >
4. <
5. =
6. >
7. <
8. =
9. =
10. >
11. <
12. >

LEARNING ACTIVITY SHEET 18

1. 7/8 inch gauge
2. 1/2 inch of copper wire
3. 9 4/5 feet of sheet metal
4. 14 16/21 feet of steel pipe
5. 1 7/24 inch rivet
6. 8/8 equals 1-inch bit
7. 20 8/9 feet of black iron
8. 12 5/6 coils of wire
9. 120 5/8 inches of steel
10. 10 3/3 equals 11 feet of band iron

LEARNING ACTIVITY SHEET 19

1. 15 7/16 inches
2. 7 3/8 inches
3. 24 3/16 feet
4. 12 11/16 inches
5. 45 8/24 feet equals 46 1/3 feet

LEARNING ACTIVITY SHEET 20

1. 5/8 inch gauge
2. 6/16 equals 3/8-inch of copper wire
3. 8 1/5 feet of sheet metal
4. 4 8/21 feet of steel pipe
5. 13/24 inch rivet
6. 1 2/3 feet of band iron
7. 47 1/8 inch of steel
8. 3 1/6 coils of wire
9. 14 2/9 feet of black iron
10. 2/8 equals 1/4-inch bit

LEARNING ACTIVITY SHEET 21

1. 4 9/10 feet
2. 8 5/8 inches equals x
3. 2 3/4 inches equals x
4. 6 15/16 feet
5. 2 3/16 inches

LEARNING ACTIVITY SHEET 22

1. 14 inches of metal
2. 5 1/32 inches of copper wire
3. 7 1/5 inches thick of metal
4. 51 17/21 feet
5. 29 5/9 square feet of band iron
6. 3019 1/2 inches of steel
7. 38 2/3 feet of wire
8. 183 1/3 feet of pipe
9. 18 9/16 square inches
10. 33 3/4 inches of copper wire

LEARNING ACTIVITY SHEET 23

1. 22 feet
2. 29 7/13 inches
3. 69 3/4 inches
4. 11 2/3 inches
5. 41 1/3 inches

LEARNING ACTIVITY SHEET 24

1. 2 2/9 inches
2. 27/40 inch
3. 29 1/3 pieces
4. 1 19/29 pieces
5. 2 95/288 pieces
6. 2 8/15 pieces
7. 3 39/56 feet
8. 11 1/4 strips
9. 7 7/48 inches
10. 18 2/7 pieces

LEARNING ACTIVITY SHEET 25

1. 11 3/19 pieces
2. 1 2/3 inches
3. 161 3/32 pieces
4. 8 48/151 pieces
5. 7 7/15 pieces

LEARNING ACTIVITY SHEET 26

A.
1. eight and twenty-five hundredths
2. two hundred eight thousandths
3. twelve ten-thousandths
4. five and two-tenths
5. seven-tenths
6. fifteen-hundredths
7. twelve and six hundred eighty-two thousandths
8. eight and five-tenths
9. twenty-six and seventy-five hundredths
10. five hundredths

B.

COMMON FRACTION	DECIMAL FRACTION	DECIMAL
11.	70/100 inch	.70 inch
12. 4/5 inch	8/10 inch	
13. 3/20 inch	15/100 inch	
14. 1/40 inch		.025 inch
15.	50/100 inch	.50 inch
16. 3/4 inch	75/100 inch	
17. 13/25 inch		.52 inch
18.	875/1000 inch	.875 inch
19. 2/5 inch	4/10 inch	
20.	375/1000 inch	.375 inch

LEARNING ACTIVITY SHEET 27

A.
1. <
2. <
3. >
4. <
5. <
6. <
7. >
8. <
9. <
10. >

B.
11. 2.203, 2.134, 2.304, 2.34
12. 0.091, 0.997, 1.019, 1.030
13. .015, 1.15, 5.11, 5.510

LEARNING ACTIVITY SHEET 28

1. 37.557 feet of steel pipe
2. 98.583 inches of sheet metal
3. 17.05 inches
4. $33.25
5. 12.36 inches of copper wire
6. 32.421 inches of steel
7. 12.94-inch bit
8. $231.63
9. 4.856 feet of band iron
10. $131.35
11. 3.5485 inches
12. .875 inches
13. .1949 inch
14. .0106 inch

LEARNING ACTIVITY SHEET 29

1. $177.59
2. 47.85 inches
3. 23.75 feet
4. 14.25 hours
5. 812.5 feet
6. $60.56
7. 47.55 feet
8. $428.00
9. 2.112 cm.
10. 20.75 yards

LEARNING ACTIVITY SHEET 30

1. $167.25
2. 50.75 inches
3. 14.25 feet
4. 16.75 feet
5. $267.38
6. $21.43
7. 17.70 feet
8. $117.49
9. 0.575 cm.
10. 1.75 yards

LEARNING ACTIVITY SHEET 31

1. $63.19
2. $33.50
3. .065 inches
4. $1,248.00
5. 33.95 inches
6. 804.6597 inches
7. $53.82
8. 15 inches
9. 0.615 inches
10. $404.1444 = $404.14

LEARNING ACTIVITY SHEET 32

1. 2.6075 inches
2. 36.638 inches
3. 1.8321 inches
4. 14.04 inches
5. 41 inches

LEARNING ACTIVITY SHEET 33

1. .0213 inches
2. 1.82 feet
3. 12
4. 8.45904 inches
5. 0.16 feet
6. $4.80
7. 13.62 feet
8. 12.5 boxes
9. .0124 inches
10. .2156 inches

LEARNING ACTIVITY SHEET 34

1. .50 = 50%
2. 6.25%
3. 75%
4. 160%
5. 80%
6. 50%
7. 90%
8. 75%
9. 62.5%
10. 34%
11. 37.5%
12. 15%
13. 30%
14. 40%
15. 28%
16. 20%
17. 12.5%
18. 100%
19. 36%
20. 525%

LEARNING ACTIVITY SHEET 35

1. 1.256 inches
2. 11 spaces
3. 16 sheets
4. 2.725 inches
5. 18.235 pieces of wire

LEARNING ACTIVITY SHEET 36

1. 150
2. 48.75
3. 16.8
4. 24
5. 185
6. 482
7. 8.64
8. 1.35
9. 550
10. 17.28

LEARNING ACTIVITY SHEET 37

1. $9.00 per hour
2. $29.76
3. 18 sheets
4. 20%
5. 8%
6. 20%
7. 200 sheets
8. $1,300
9. 40 hoops

LEARNING ACTIVITY SHEET 38

Evaluated to the satisfaction of the instructor.

LEARNING ACTIVITY SHEET 39

	VOLUME	LENGTH	AREA	WEIGHT	TEMPERATURE
1.		42 in.			
2.	9 cu. yds.				
3.			1450		
4.		39 meters			
5.		82 cm			
6.		72 yds.			
7.				50 lbs.	
8.			2540		
9.	12 cu. yds.				
10		42 feet			
11.		63 feet			
12.					55 degrees F
13.					
14.					90 degrees F
15.	2 pints				
16.				16 grams	

LEARNING ACTIVITY SHEET 40

1.	4 1/3 yards	11.	3 1/2 yards
2.	612 inches	12.	260 cm
3.	2 meters	13.	56 mm
4.	2 inches	14.	17 1/3 yards
5.	8 cm	15.	7 1/6 feet
6.	16 feet	16.	10 1/2 feet
7.	16 yards	17.	2,376 inches
8.	20 cm	18.	1/4 meter
9.	741 inches	19.	12 inches
10.	576 inches	20.	1,014 inches

LEARNING ACTIVITY SHEET 41

A. Tangent
B. Diameter
C. Radius
D. Chord
E. Circumference
F. Semicircle
G. Arc

LEARNING ACTIVITY SHEET 42

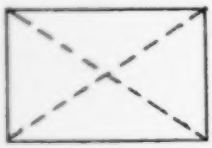
A-D Evaluated to the satisfaction of the instructor.

E. diameter
F. radius
G. circumference
H. chord
I. semicircle

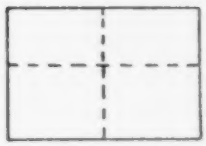
LEARNING ACTIVITY SHEET 43

1. A = 70°
   B = 25°
2. C = 60°
   D = 60°
3. E = 95°
   F = 45°
4. G = 70°
   H = 90°
5. I = 45°
   J = 80°

LEARNING ACTIVITY SHEET 44

A. 1. 

2.

3. 

4.

B. 1. square
   2. circle
   3. rectangle
   4. triangle
   5. rectangle
   6. triangle

LEARNING ACTIVITY SHEET 45

A. 1. 140 feet
   2. 40 feet

B. 1. 52 feet
   2. 72 inches

C. 1. 6.28 inches
   2. 12.56 feet

LEARNING ACTIVITY SHEET 46

A. 1. 64 sq. feet
   2. 36 meters

B. 1. tool room - 100 sq. ft.
2. store room - 48 sq. ft.
3. 1st locker room - 143 sq. ft.
4. 2nd locker room - 168 sq. ft.
5. office space - 240 sq. ft.

Total - 699 sq. ft.

C. 16 sq. inches

LEARNING ACTIVITY SHEET 47

1. 456 pounds
2. 12 cubic feet
3. 2712 bushels
4. 18715 gallons
5. 21 gallons
6. 29.4375

LEARNING ACTIVITY SHEET 48

1. $5.85
2. 4.8 pounds
3. 32 packages
4. 3 pounds 9 ounces
5. 35 pounds
6. 63¢

LEARNING ACTIVITY SHEET 49

A. 1. -6°F
2. 24°F
3. 125°F
4. 60°F
5. 3°F
6. 8°F

B. 1. 90°C
2. 81°C
3. 54°C
4. -5°C

LEARNING ACTIVITY SHEET 50

1. 3 hours
2. 8 hours 5 minutes
3. 7 hours 15 minutes
4. 7 hours 40 minutes
5. 8 hours 5 minutes

LEARNING ACTIVITY SHEET 1--WORDS AND NUMBERS

UNIT I--NUMERATION

Directions: Write the word numbers for the given quantities (1-10). Write in numerals for the given word numbers (11-20).

1. 582 steel pipes _____
2. 119 coils of wire _____
3. 73 meters _____
4. 6,024 sheets of metal _____
5. 376 elbows _____
6. 911 drills _____
7. 428 driver pulleys _____
8. 101 drip pans _____
9. 52,973 rivets _____
10. 17,238 brackets _____
11. three hundred fifty-two pieces of angle iron _____
12. one thousand six hundred two flathead rivets _____
13. seventy-five strips of black iron _____
14. one hundred thirteen coils of copper wire _____
15. fifty-six pulleys _____
16. eleven gages _____
17. seven hundred two bars of solder _____
18. three hundred ninety-three sheets of metal _____
19. five thousand two hundred five files _____
20. thirty-nine sheets of tin plate _____

METAL TRADES

LEARNING ACTIVITY SHEET 2--ADDING

UNIT II--ADDING WHOLE NUMBERS

Directions: Add and check your answers in the following problems.

EXAMPLE: 5 coils of metal + 36 coils of metal

$$\begin{array}{r} 5 \\ +\ 36 \\ \hline 41 \end{array}$$ coils of metal

Check: $$\begin{array}{r} 36 \\ +\ 5 \\ \hline 41 \end{array}$$ coils of metal

1. 3,241 sheets of metal + 975 sheets of metal = _____
2. 16 elbows + 9 elbows + 38 elbows = _____
3. 87 coils of wire + 38 coils of wire = _____
4. 932,562 rivets + 275,481 rivets + 82,792 rivets = _____
5. 79 pipes + 925 pipes = _____
6. 375 sheets of tin plate + 985 sheets of tin plate = _____
7. 1,576 brackets + 3,728 brackets = _____
8. 572 inches of steel + 1,238 inches of steel = _____
9. 17 feet of copper wire + 29 feet of copper wire = _____
10. 37,243 driver pulleys + 6,582 driver pulleys = _____

METAL TRADES

LEARNING ACTIVITY SHEET 3--ADDING ITEMS

UNIT II--ADDING WHOLE NUBMERS

Directions: Read and work the following problems.

1. Six shipments of sheets of metal arrived at the factory. The amount of sheets in each shipment were as follows: 183 sheets, 176 sheets, 1,293 sheets, 95 sheets, 101 sheets, and 2,581 sheets. What is the total number of sheets of metal that arrived? _____

2. A mechanic takes the following field measurements: 13, 18, 21, 38, and 16 inches. What is the combined total? _____

3. Three round steel pipes are to be used for a project. The lengths of each are 5 ft., 18 ft., and 32 ft. What is the total length if the pipes were put together? _____

4. The following lengths are cut from a 30-foot bar of hot rolled steel: 215 inches, 56 inches, 98 inches, 118 inches, and 239 inches. How many inches of bar have been cut off? _____

5. A machinist used 87, 73, and 279 bar stocks. What is the total number of bars used? _____

6. Five orders of rivets arrived today. The number of rivets in each order were as follows: 1,375; 2,550; 1,590; 2,310; and 3,450 rivets. What was the total number of rivets received? _____

7. A machinist has two coils of copper wire. One coil contains 275 feet of wire, the other 350 feet. How many feet of wire are on the two coils combined? _____

8. You have 3 boxes of brackets. The boxes contain 75 brackets, 57 brackets, and 34 brackets, respectively. How many brackets do you have? _____

9. Two shipments of materials arrived today. One shipment contained 30 pipes, the second 87 pipes. How many pipes arrived today? _____

10. Orders were made for 325 sheets of tin plate and 180 sheets of tin plate. How many sheets of tin plate were ordered? _____

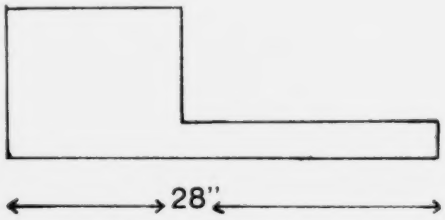
METAL TRADES

LEARNING ACTIVITY SHEET 4--SUBTRACTION

UNIT III--SUBTRACTING WHOLE NUMBERS

Directions: Subtract and check your answers on the following problems.

EXAMPLE:



Find x $\begin{array}{r} 28" \\ -\ 9 \\ \hline 19" \end{array}$ = x

Check $\begin{array}{r} +\ 9 \\ \hline 28" \end{array}$

1. 872 sheets of metal - 598 sheets of metal = _____
2. 5,876 driver pulleys - 979 driver pulleys = _____
3. 98 ft. of copper wire - 23 ft. of copper wire = _____
4. 432 in. of steel - 289 in. of steel = _____
5. 53,725 brackets - 22,586 brackets = _____
6. 800 sheets of tin plate - 587 sheets of tin plate = _____
7. 73 pipes - 9 pipes = _____
8. 32,400 rivets - 2,795 = _____
9. 93 coils of wire - 17 coils of wire = _____
10. 238 elbows - 79 elbows = _____

METAL TRADES

LEARNING ACTIVITY SHEET 5--SUBTRACTION

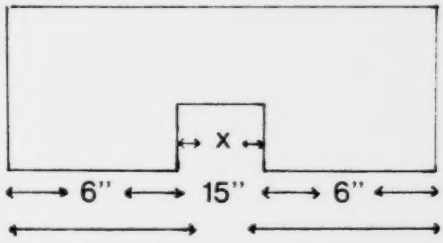
UNIT III--SUBTRACTING WHOLE NUMBERS

Directions: Read and work the following problems.

1. During inventory, Mr. Harris found 5,384 sheets of metal in the warehouse. The next week there were 793 sheets sent to a certain job site. How many sheets were left in the warehouse? _____

2. A round pipe measures 56 inches. If a 38-inch piece is cut off, how much of the pipe is left? _____

3. Compute the missing dimension marked x in the length of the gage shown below. _____



4. The following lengths are cut from an 80 foot bar of hot rolled steel: 5 ft., 18 ft., 6 ft. How long is the original bar now? _____

5. A total of 1,620 bar stocks were in the shop, but 759 stocks were sent out on a truck. How many bar stocks were left in the shop? _____

6. 107 feet
- 75 feet

7. 322 inches
- 147 inches

8. $2,425.00
- 986.00

9. 319 pulleys
- 68 pulleys

10. 982 sheets of metal
- 761 sheets of metal

METAL TRADES

LEARNING ACTIVITY SHEET 6--MULTIPLYING ITEMS

UNIT IV--MULTIPLYING WHOLE NUMBERS

Directions: Multiply and check your answers on the following problems.

1. 133 in. of steel x 56 = _____

2. 26 driver pulleys x 6 = _____

3. 98 ft. of copper wire x 12 = _____

4. 12,683 rivets x 260 = _____

5. 275 sheets of metal x 16 = _____

6. 4,832 brackets x 38 = _____

7. 240 rivets x 38 = _____

8. 73 pipes x 24 = _____

9. 55 drip pans x 5 = _____

10. 360 drills x 12 = _____

METAL TRADES

LEARNING ACTIVITY SHEET 7--MULTIPLICATION

UNIT IV--MULTIPLYING WHOLE NUMBERS

Directions: Read and work each problem.

1. A shipment of 15 bundles of round steel pipes arrived at the factory. If there are 45 pipes per bundle, how many pipes are there in all? _____

2. Each drill that was needed for a certain job cost $52.00. If 4 drills are needed, what will be the total cost? _____

3. If 183 strips, each 3 inches wide, must be cut from one piece of black iron, what must be the total width of the black iron? (Do not allow for waste) _____

4. If each machinist received a $52.00 bonus at the end of the year, how much money was paid by the company in bonuses if there are 236 machinissts? _____

5. Materials were sent to three job sites. 775 sheets of metal were sent to each job site. How many sheets of metal were sent in all? _____

6. A shipment of 10 bundles of round steel pipes arrived at the factory. If 24 pipes are in each bundle, how many pipes are there in all? _____

7. If 152 strips, each 4 inches wide, must be cut from one piece of black iron, what must be the total width of the black iron? (Do not allow for waste) _____

8. If 24 rivets are in a box, how many rivets would 3 boxes contain? _____

9. Each file costs $15.00; how much would 6 files cost? _____

10. If a machinist earns $14.00 per hour, what would be the earnings for 8 hours? _____

METAL TRADES

LEARNING ACTIVITY SHEET 8--DIVIDING ITEMS

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Divide and check the following problems.

1. 18 ft. of copper wire ÷ 6 = _____
2. 444 in. of steel ÷ 6 = _____
3. 75 driver pulleys ÷ 3 = _____
4. 46,266 rivets ÷ 22 = _____
5. 78 brackets ÷ 3 = _____
6. 7,611 sheets of metal ÷ 129 = _____
7. 69,445 round pipes ÷ 323 = _____
8. 5,577 ft. of copper wire ÷ 429 = _____
9. 847 drills ÷ 121 = _____
10. 52 coils of wire ÷ 4 = _____

METAL TRADES

LEARNING ACTIVITY SHEET 9--DIVISION

UNIT V--DIVIDING NUMBERS

Directions: Read and work the following problems.

1. An 87-inch stack of sheets is in the warehouse. If each sheet is 3 inches wide, how many sheets are there? _____

2. The total amount for 24 files that were bought was $360.00 without tax. How much did each file cost? _____

3. A shipment of 1,458 round steel pipes arrived at the factory. If they came on bundles of 162 pipes, how many bundles were there? _____

4. How many pieces of wire that are 12 inches long can be obtained from a coil of wire which has 204 inches? _____

5. If a machinist receives $48.00 per day and works 6 hours each day, how much does he earn per hour? _____

LEARNING ACTIVITY SHEET 10--FINDING THE AVERAGE

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Find the average of the following problems.

1. Find the average thickness of a bar of metal which measures at four points as follows: 3 in., 2 in., 4 in., 3 in. _____

2. Find the average wage per day if an apprentice receives $52.00 on Monday, $35.00 on Tuesday, and $27.00 on Wednesday. _____

3. A worker makes 13 elbows on Monday, 17 on Tuesday, 16 on Wednesday, 14 on Thursday, and 15 on Friday. What is the average per day? _____

4. Find the average weight of four sheets of metal which weigh as follows: 12 pounds, 17 pounds, 21 pounds, and 14 pounds. _____

5. Find the average wage per day of a machinist who receives $68.00 on Monday, $53.00 on Wednesday, $92.00 on Thursday, and $75.00 on Friday. _____

6. A shipment of steel rods arrived each day of the week. The amount of the shipment was as follows: 94, 68, 32, 45, 101, and 74. Find the average that arrived each day. _____

7. Find the average diameter of 8 circular pipes with diameters as follows: 6 in., 3 in., 10 in., 12 in., 5 in., 7 in., 6 in., and 7 in. _____

LEARNING ACTIVITY SHEET 11--FINDING THE COMMON DENOMINATOR

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Name the least common multiple of the denominators in the fractions below. Note: Be sure the fractions have the same denominators so they can be added.

EXAMPLE: The least common multiple of the denominator 2 and 3 is 6.

2/3 in. = 4/6 in.
1/2 in. = 3/6 in.

$$\begin{array}{r} 4/6 \text{ in.} \\ +\ 3/6 \text{ in.} \\ \hline 7/6 \text{ in.} \end{array} = 1\ 1/6 \text{ in.}$$

1. 5/6 in., 2/9 in. = _____

2. 5/6 yd., 3/14 yd. = _____

3. 3/8 in., 1/3 in. = _____

4. 1/4 yd., 1/3 yd. = _____

5. 2/5 in., 1/10 in. = _____

6. Name the fewest number of drills to be put on shelves to form exact rows of 6 or 8 drills. _____

7. What is the least number of sheets of metal that can be put into stacks that have 4 or 5 sheets per stack? _____

8. Name the least number of rivets to be put in tool cases if each case is to hold 24 or 36 rivets. _____

METAL TRADES

LEARNING ACTIVITY SHEET 12--FINDING FACTORS

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Give the different amounts into which each quantity can be divided evenly.

1. 32 elbows _____

2. 100 rivets _____

3. 6 ft. of wire _____

4. 36 driver pulleys _____

5. 10 drills _____

6. 18 sheets of metal _____

7. 50 inches of tin plate _____

8. 24 steel pipes _____

9. 8 drip pans _____

10. 42 inches of black iron _____

METAL TRADES

LEARNING ACTIVITY SHEET 13--FINDING FACTORS

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Name the greatest common factor of the numerator and denominator which may be used to reduce the fraction to the lowest terms.

EXAMPLE: $\frac{6}{8}$ 6 is the numerator / 8 is the denominator

The greatest common factor of 6 and 8 is 2.

6/8 - 2/2 = 3/4 in.

1. 5/10 ft. _____

2. 9/12 in. _____

3. 4/16 ft. _____

4. 32/36 in. _____

5. 3/24 ft. _____

6. 18 boys and 24 girls are in a class who would like to work on some simple projects in Metal Trades. If the boys and girls are to be grouped separately in equal groups, what is the greatest number of students per group. _____

7. What is the greatest number of sheets of metal that we can give to different supervisors if we want to distribute 32 sheets and 40 sheets of metal in groups of the same amount?

_____

8. What is the greatest number of round steel pipes we can place in each row if we want to arrange a group of 8 pipes, 14 pipes, and 20 pipes in rows of the same amount? _____

9. What is the greatest number of drills that we can place on each shelf if we want to arrange a group of 8 drills and 12 drills in groups of the same amount? _____

10. A machinist made 4 elbows on Monday, 8 elbows on Tuesday, and 12 elbows on Wednesday. The machinist would like to arrange them equally in stacks. What is the greatest number of elbows per stack if they are arranged separately? _____

METAL TRADES

LEARNING ACTIVITY SHEET 14--WORD PROBLEMS

UNIT V--DIVIDING WHOLE NUMBERS

Directions: Solve the following problems.

1. A job site needed 18 feet of copper wire, 38 feet of steel wire, and 28 feet of tin wire. How many feet of wire are needed in all? _____

2. 22 sheets of metal are stacked together. Each sheet is 3 inches thick. Find the total thickness of the stack.

_____

3. A rod iron pipe 468 inches long is to be cut into 12 equal pieces. How long will each piece of rod iron be? _____

4. A purchase order was made for 17 drills at $38.00 each. If the company paid $569.00, how much did they still owe?

5. Three pieces of copper wire were cut from a 60-feet coil. If the lengths of the pieces were 12 feet, 8 feet, and 16 feet, how much of the coil was left? _____

6. A sheet of steel has 576 square inches in area. A piece having 238 square inches in cut from this sheet. What is the area of the remaining piece? _____

7. A Metal Trades class was working on different projects. Each group used the following number of rivets: 5,236; 2,365; 2,589; and 3,365. How many rivets were used in all?

_____

8. A machinist worked six days a week for 4 weeks and made $576.00 per month. How much did the machinist make per week? _____ per day? _____

9. An order arrived for 7 bundles of sheets of steel. Each bundle contained 24 sheets. If the sheets are to be divided into 14 jobs, how many sheets of steel will go to each job?

_____

10. A machinist is paid $7.00 per hour. If the machinist works 78 hours in two weeks, what will the gross pay be?

_____

METAL TRADES

LEARNING ACTIVITY SHEET 15--WORKING WITH FRACTIONS

UNIT VI--FRACTIONS

Directions: Answer each problem below.

1. A worker cuts a round steel pipe into 6 equal pieces. One of the six pieces is used for a job site.

   a. Which number represents the numerator? _____

   b. Which number represents the denominator? _____

   c. What fractional part of the pipe was used? _____

2. Draw a line to represent each of the following fractions.

   EXAMPLE: 2/3 inch

   a. 1/2 inch of steel pipe a. _____

   b. 3/8 inch of copper wire b. _____

   c. 7/8 inch of tin pipe c. _____

   d. 1/5 inch of sheet metal d. _____

   e. 2/7 inch of steel wire e. _____

   f. 6/16 inch of black iron f. _____

METAL TRADES

LEARNING ACTIVITY SHEET 16--WORKING FRACTIONS

UNIT VI--FRACTIONS

Directions: Read and work the following problems.

1. Write each fractional word form as a number.
   a. three-fifths inch of metal _____
   b. four-sevenths inch of wire _____
   c. fifteen-sixteenths inch of tin pipe _____
2. Write each fractional number form as a word form.
   a. 10/14 inch of steel pipe _____
   b. 7/12 inch of steel wire _____
   c. 6/18 inch of black iron _____
3. Reduce each of the following fractions to lowest terms.
   a. 8/32 inch bracket _____
   b. 3/48 inch rivet _____
   c. 15/30 inch of steel pipe _____

METAL TRADES

LEARNING ACTIVITY SHEET 17--GREATER THAN/LESS THAN

UNIT VI--FRACTIONS

Directions: Using the cross-multiplication method, place the correct symbol (< > =) in the circle between the amounts.

EXAMPLE: 5/8 inch of wire < 3/4 inch of wire
$4 \times 5 = 20 < 24 = 8 \times 3$

1. 1/8-inch rivet ◯ 4/25-inch rivet
2. 3/5 feet of sheet metal ◯ 4/9 feet of sheet metal
3. 5/8-inch width of wire ◯ 9/16-inch width of wire
4. 7/8 of a bundle of pipes ◯ 9/10 of a bundle of pipes
5. 9/4-inch gauge ◯ 27/12-inch gauge
6. 16/3 feet of hot rolled steel ◯ 25/8 feet of hot rolled steel
7. 1/2-inch of copper wire ◯ 2/3-inch of copper wire
8. 8/9-inch bracket ◯ 56/63-inch bracket
9. 3/8-inch gauge ◯ 21/56-inch gauge
10. 18/5-inch thickness ◯ 19/9-inch thickness
11. 3/4 feet of black iron ◯ 4/5 feet of black iron
12. 5/8 of a coil of wire ◯ 7/12 of a coil of wire

LEARNING ACTIVITY SHEET 18--ADDING FRACTIONS

UNIT VI--FRACTIONS

Directions: Add the following and reduce to lowest terms.

EXAMPLE: 4/8 inches + 2/8 inches

$$\begin{array}{r} 4/8 \text{ inches} \\ +\ 2/8 \text{ inches} \\ \hline 6/8 \text{ inches} \end{array} = 3/4 \text{ inches}$$

1. 5/8-inch gauge + 2/8-inch gauge _____
2. 7/16-inch of copper wire + 1/16-inch of copper wire _____
3. 9 feet of sheet metal + 4/5 feet of sheet metal _____
4. 9 3/7 feet of steel pipe + 5 1/3 feet of steel pipe _____
5. 11/12-inch rivet + 3/8-inch rivet _____
6. 5/8-inch bit + 3/8-inch bit _____
7. 17 5/9 feet of black iron + 3 1/3 feet of black iron _____
8. 8 coils of wire + 4 5/6 coils of wire _____
9. 83 7/8-inches of steel + 36 3/4 inches of steel _____
10. 6 1/3 feet of band iron + 4 2/3 feet of band iron _____

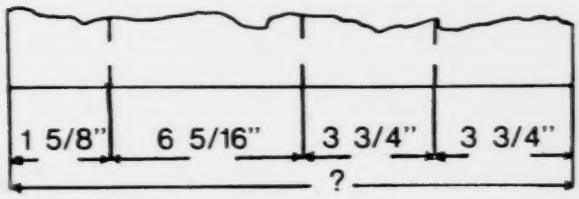
METAL TRADES

LEARNING ACTIVITY SHEET 19--ADDING FRACTIONS

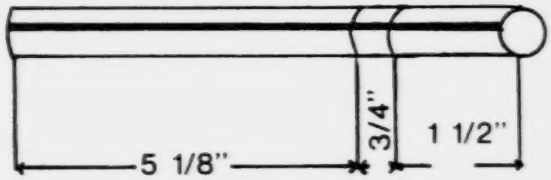
UNIT VI--FRACTIONS

Directions: Read and work the following problems.

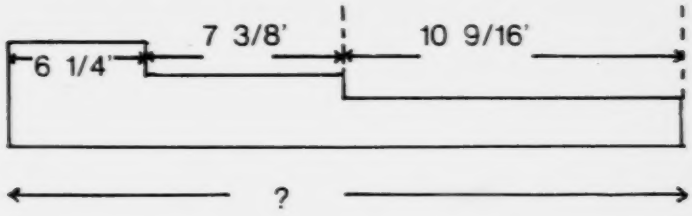
1. Compute the overall length of the stretchout.



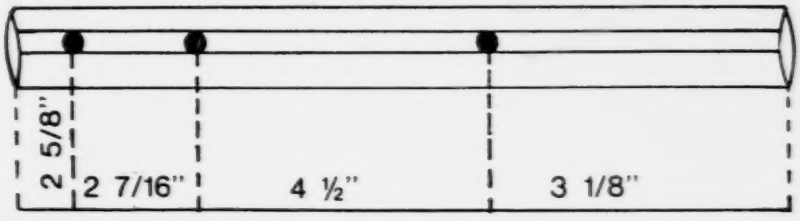
2. Compute the overall length of the pipe shown.



3. Compare the unknown dimension.



4. The distance between rivet holes on a pipe seam is given in the drawing below. Compute the length of the pipe.



5. A mechanic takes the following field measurements: 13 7/12 feet, 17 5/6 feet, 3 1/2 feet, 11 3/4 feet, and 20 1/3 feet. Find the combined total.

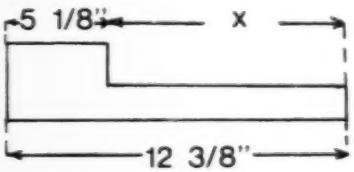
METAL TRADES

LEARNING ACTIVITY SHEET 20--SUBTRACTING FRACTIONS

UNIT VI--FRACTIONS

Directions: Subtract the following and reduce to lowest terms.

EXAMPLE:



12 3/8 ins.
- 5 1/8 ins.
7 2/8 ins. = 7 1/4 ins.

1. 7/8-inch gauge minus 2/8-inch gauge _____

2. 7/16-inch of copper wire minus 1/16 inch of copper wire _____

3. 9 feet of sheet metal minus 4/5 feet of sheet metal _____

4. 9 5/7 feet of steel pipe minus 5 1/3 feet of steel pipe _____

5. 11/12-inch rivet minus 3/8-inch rivet _____

6. 6 1/3 feet of band iron minus 4 2/3 feet of band iron _____

7. 83 7/8-inches of steel minus 36 2/4-inches of steel _____

8. 8 coils of wire minus 4 5/6 coils of wire _____

9. 17 5/9 feet of black iron minus 3 1/3 feet of black iron _____

10. 5/8-inch bit minus 3/8-inch bit _____

METAL TRADES

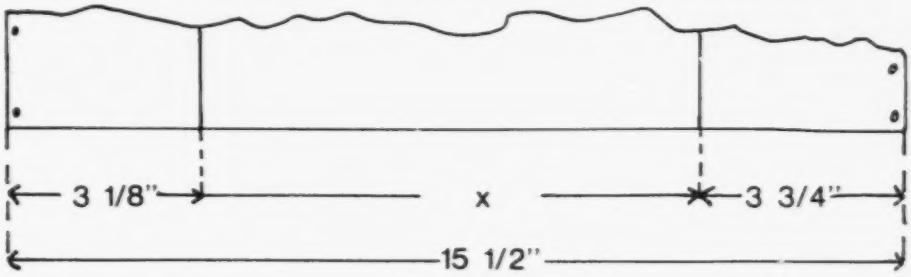
LEARNING ACTIVITY SHEET 21--SUBTRACTING FRACTIONS

UNIT VI--FRACTIONS

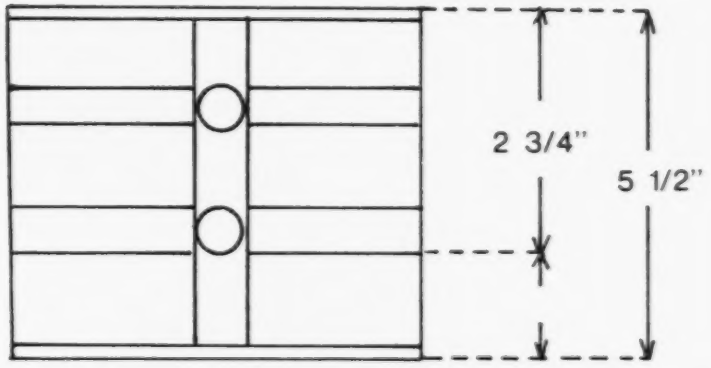
Directions: Read and work the following problems.

1. A steel pipe is 7 2/5 feet long. If a piece measuring 2 1/2 feet is cut off, what is the length of the remaining piece?

2. Compute the missing dimension of the stretchout.

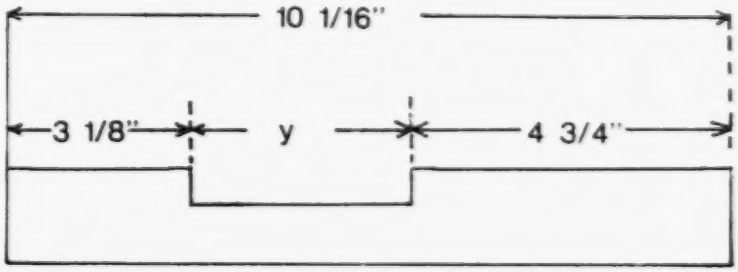


3. Compute the dimension x.



4. A piece 3 5/16 feet long is cut from a sheet of metal 10 1/4 feet long. What is the length of the remaining piece?

5. Compute the unknown dimension.



METAL TRADES

LEARNING ACTIVITY SHEET 22--MULTIPLYING FRACTIONS

UNIT VI--FRACTIONS

Directions: Multiply the following and reduce to lowest terms.

1. 7/8-inch of metal x 16 _____
2. 1 7/16-inches of copper wire x 3 1/2 _____
3. 9 sheets of metal x 4/5-inch thick _____
4. 9 5/7 feet length of each pipe x 5 1/3 pipes _____
5. 6 1/3 feet of band iron x 4 2/3 feet of band iron _____
6. 83 7/8-inch of steel x 36 pieces _____
7. 8 coils of wire x 54 5/6 feet of wire in each coil _____
8. 73 1/3 pipes x 2 1/2 feet _____
9. 3 3/8 inches x 5 1/2 inches _____
10. 6 inches of copper wire x 5 5/8 pieces _____

METAL TRADES

LEARNING ACTIVITY SHEET 23--MULTIPLYING FRACTIONS

UNIT VI--FRACTIONS

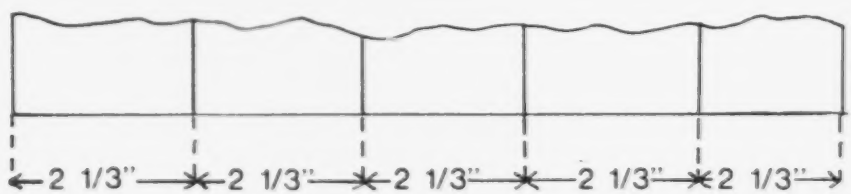
Directions: Read and work the following problems.

1. What is the total length of stock if there are 16 pieces each 1 3/8 feet long? _____

2. Find the total length of 8 pieces of wire, each 3 9/13 inches long. _____

3. What is the total length of angle iron required if 12 pieces are needed, each 5 3/4 inches long? (Allow 1/16 inch waste for each cut.) _____

4. Compute the overall length of the stretchout. _____



5. Compute the total length of band iron required if 8 pieces are needed, each 5 1/6 inches long. _____

METAL TRADES

LEARNING ACTIVITY SHEET 24--DIVIDING FRACTIONS

UNIT VI--FRACTIONS

Directions: Divide the following and reduce to lowest terms.

1. 12 1/2 inches of copper wire ÷ 5 5/8 pieces _____
2. 3 3/8 inches ÷ 5 pieces _____
3. 73 1/3 feet of pipe ÷ 2 1/2 feet _____
4. 8 feet of wire ÷ 4 5/6 feet of wire _____
5. 83 7/8 inch of steel ÷ 36 inches _____
6. 6 1/3 feet of band iron ÷ 2 1/2 feet _____
7. 19 5/7 feet of pipe ÷ 5 1/3 pieces _____
8. 9 sheets of metal ÷ 4/5 inch strips _____
9. 21 7/16 inch of copper wire ÷ 3 pieces _____
10. 16 inches of metal ÷ 7/8 inch _____

METAL TRADES

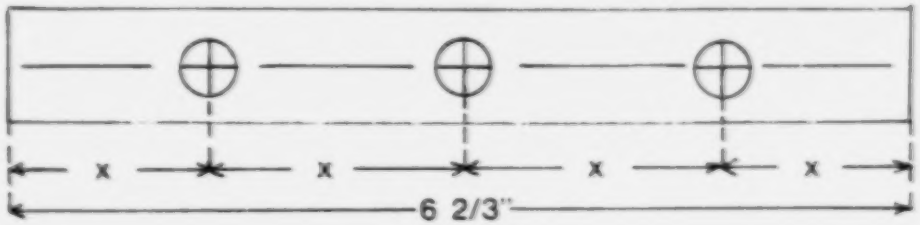
LEARNING ACTIVITY SHEET 25--DIVIDING FRACTIONS

UNIT VI--FRACTIONS

Directions: Read and work the following problems.

1. How many pieces of wire 4 3/4 inches long can be obtained from 53 inches of stock? _____

2. Find the distance between each hole on the drawing. _____



3. How many pieces can be cut from a strip of steel 515 1/2 inches long if each stamping requires 3 1/5 inches of steel? _____

4. How many pieces of angle iron 9 7/16 inches long can be obtained from a piece that is 78 1/2 inches long? _____

5. How many pieces 2 1/2 inches long can be cut from an 18 2/3 inch length of rod? _____

LEARNING ACTIVITY SHEET 26--WORKING WITH DECIMALS

UNIT VII--DECIMALS

Directions: Write the following decimal measurements from a steel rule in words.

A. 1. 8.25 inches _____

2. .208 inch _____

3. .0012 inch _____

4. 5.2 inches _____

5. .7 inch _____

6. .15 inch _____

7. 12.682 inches _____

8. 8.5 inches _____

9. 26.75 inches _____

10. .05 inch _____

B. Compute the table of measurements for the following steel rule divisions.

COMMON FRACTION	DECIMAL FRACTION	DECIMAL
11. 14/20 inch		
12.		.8 inch
13.		.15 inch
14.	25/1000 inch	
15. 2/4 inch		
16.		.75 inch
17.	52/100 inch	
18. 7/8 inch		
19.		.4 inch
20. 3/8 inch		

LEARNING ACTIVITY SHEET 27--GREATER THAN/LESS THAN

UNIT VII--DECIMALS

Directions: Place < (less than) or > (greater than) between each set of decimal amounts.

A. 1. 4.23 lbs. of sheet metal _____ 4.86 lbs. of sheet metal

2. 5.005 ft. of angle iron _____ 5.05 ft. of angle iron

3. 0.43 in. wide _____ 0.043 in. wide

4. 6.2 in. of stiffner _____ 6.230 in. of stiffner

5. 0.059 in. of thickness _____ 0.4590 in. of thickness

6. 8.36 ft. of pipe _____ 8.6 ft. of pipe

7. 2.351 lbs. of rivets _____ 2.051 lbs. of rivets

8. 7.604 ft. of sheet metal _____ 7.639 ft. of sheet metal

9. 4.009 in. rivet _____ 4.05 in. rivet

10. 3.666 in. gauge _____ 3.665 in. gauge

B. Rearrange each set of amounts in order from smallest to largest.

11. 2.34 in., 2.134 in., 2.034 in., 2.304 in.

12. 1.03 lbs., 0.997 lbs., 0.091 lbs., 1.019 lbs.

13. 5.11 ft., 5.510 ft., 1.15 ft., .015 ft.

METAL TRADES

LEARNING ACTIVITY SHEET 28--WORKING DECIMAL PROBLEMS

UNIT VII--DECIMALS

Directions: Add or subtract the following.

1. 22.401 feet of steel pipe plus 15.156 feet of steel pipe _____

2. 123.57 inches of sheet metal minus 24.987 inches of sheet metal _____

3. 6.2 inches plus 8.5 inches plus 2.35 inches _____

4. $9.70 plus $8.24 plus $15.31 _____

5. 18 inches of copper wire minus 5.64 inches of copper wire _____

6. 7.3 inches of steel plus 6.701 inches of steel plus 18.42 inches of steel _____

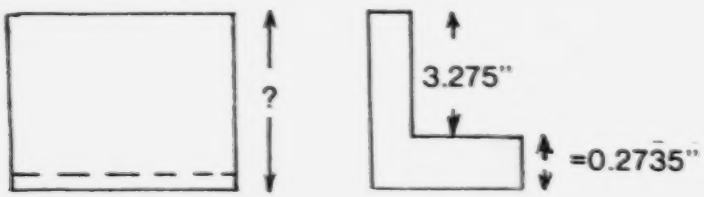
7. 13.5 inch bit minus .56 inch bit _____

8. $92.70 plus $5.08 plus $133.85 _____

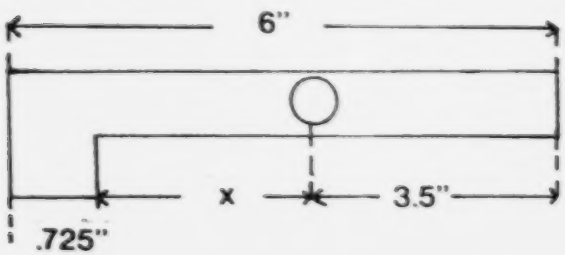
9. 3.7 feet of band iron plus 1.156 feet of band iron _____

10. $157.33 minus $25.98 _____

11. Find the height of the stiffner. _____



12. Compute the distance x. _____



13. Find the total thickness of three pieces of sheet metal of the following thicknesses: 0.0239 inches, 0.015 inches, and 0.156 inches. _____

14. Find the difference in thickness between two sheets of metal 0.013 inch and 0.0024 inch. _____

METAL TRADES

LEARNING ACTIVITY SHEET 29--ADDING DECIMALS

UNIT VII--DECIMALS

Directions: Read and work the following problems.

1. The invoice showed the following cost, rivets $49.75, drill bits $37.89, copper wire $89.95. What was the total of the invoice? _____

2. The following widths of metal were cut from one sheet of metal: 21.35 inches, 5.75 inches, 12.5 inches, and 8.25 inches. What was the total width of the sheet of metal? _____

3. Five pipes were cut in the shop today. They measured, 5.75 feet, 4.5 feet, 6.25 feet, 4.75 feet, and 2.5 feet. What was the total number of feet of pipe cut? _____

4. Two machinists recorded the time spent on a joint project. One spent 2.5 hours, 3.25 hours, and 1.75 hours. The second one spent 4.5 hours and 2.25 hours. How many total hours were spent on the project? _____

5. The following lengths of wire were found in the shop: 289.5 feet, 372.25 feet, and 150.75 feet. How many feet of wire were found? _____

6. $50.37
+ 10.19

7. 32.05 feet
+ 15.50 feet

8. $275.97
+ 152.03

9. 2.075 cm
+ .037 cm

10. 13.5 yards
+ 7.25 yards

LEARNING ACTIVITY SHEET 30--SUBTRACTING DECIMALS

UNIT VII--DECIMALS

Directions: Read and work the following problems.

1. A bill for $250.75 was received. A payment of $83.50 was made. What is the balance? _____

2. You have a sheet of metal 63.5 inches wide. If you cut a piece 12.75 inches wide, what width would be left? _____

3. You have a piece of pipe 24.5 feet in length. If you cut two lengths of pipe, 5.75 feet and 4.5 feet, respectively, how many feet of pipe will be left? _____

4. You figure materials needed for a project. You will need 29.5 feet of copper wire, and you have 12.75 feet of wire on hand.

   How much more copper wire will you need? _____

5. The shop has $542.75 on hand to purchase supplies. The materials purchased cost $275.37. How much money will be left? _____

6. $32.47
   - 11.04

7. 24.75 feet
   - 7.05 feet

8. $192.50
   - 75.01

9. 2.075 cm
   - 1.5 cm

10. 3.5 yards
    - 1.75 yards

METAL TRADES

LEARNING ACTIVITY SHEET 31--MULTIPLYING DECIMALS

UNIT VII--DECIMALS

Directions: Multiply the following and solve the problems.

1. 71 x $.89 _____

2. 25 boxes of rivets x $1.34 per box _____

3. .005 inch x 13 _____

4. $83.20 per drill x 15 drills _____

5. 9.7 strips x 3.5 inches _____

6. 158.71 inch length of each pipe x 5.07 pipes _____

7. 19.5 feet of sheet metal x $2.76 per sheet _____

8. 3.75 inches of copper wire x 4 pieces _____

9. .75 inch x .82 inch _____

10. $198.11 per foot x 2.04 feet _____

LEARNING ACTIVITY SHEET 32--MULTIPLYING DECIMALS

UNIT VII--DECIMALS

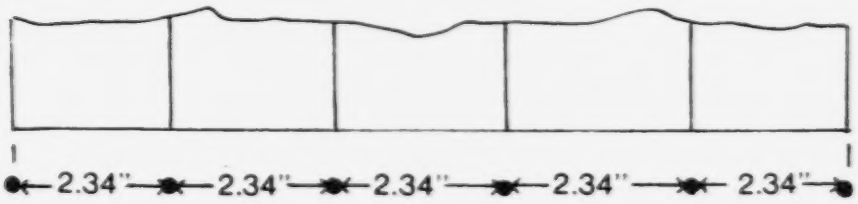
Directions: Read and work the following problems.

1. How high is a pile of 175 sheets of 28 gauge galvanized iron? (28 gauge equals .0149 inch thick) _____

2. If 7 strips, each 5.234 inches wide, must be cut from one piece of tin plate, what must be the total width of the tin plate? _____

3. Find the total height of a stack of 93 sheets of black iron, each 0.0197 inch thick. _____

4. Compute the overall length of the stretchout. _____



5. Compute the total length of band iron required if 8 pieces are needed, each 5.125 inches long. _____

METAL TRADES

LEARNING ACTIVITY SHEET 33--DIVIDING DECIMALS

UNIT VII--DECIMALS

Directions: Divide and solve the following problems.

1. .11928 inch ÷ 5.6 pieces _____

2. 5.46 feet ÷ 3 strips _____

3. 21.1476 inches ÷ 1.7623 inches _____

4. 21.1476 inches wide ÷ 2.5 strips _____

5. 2.88 feet of wire ÷ 18 pieces _____

6. $57.60 ÷ 12 drills _____

7. 326.88 feet of steel pipe ÷ 24 pieces _____

8. $65.00 ÷ 5.20 per box _____

9. 0.3720 inch in height ÷ 30 sheets of metal _____

10. .500192 inch ÷ 2.32 _____

LEARNING ACTIVITY SHEET 34--FRACTIONS TO PERCENTS

UNIT VIII--PERCENTS

Directions: Change each fractional amount to a percentage by either method shown below:

(1) $1/2 \times 50/50 = 50/100 = 50\%$

(2) $2\overline{)1.0} = .50 = 50\%$ (10)

1. 1/2 waste
2. 1/16 decrease
3. 9/12 tin
4. 8/5 increase
5. 4/5 lead
6. 1/2 profit
7. 9/10 waste
8. 3/4 lead
9. 5/8 overage
10. 17/50 tin
11. 3/8 waste
12. 3/20 profit
13. 3/10 shortage
14. 2/5 overage
15. 7/25 lead
16. 1/5 increase
17. 1/8 tin
18. 5/5 lead
19. 9/25 tin
20. 21/4 profit

METAL TRADES

LEARNING ACTIVITY SHEET 35--DIVIDING DECIMALS

UNIT VII--DECIMALS

Directions: Read and work the following problems.

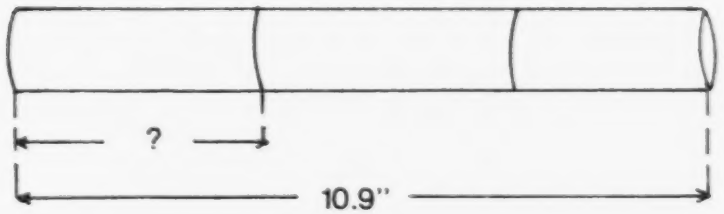
1. A steel sheet 8.792 inches wide is to be sheared into seven strips of equal width. How wide will each strip be?

   _____

2. A piece of band iron 20.075 inches long is to be divided into equal spaces of 1.825 inches each. How many spaces will there be? _____

3. How many sheets will be in a stack of sheets 4 inches high? The thickness of each sheet is .25 inch. _____

4. Find the width of the pipe. _____



5. A piece of wire 77.3164 inches long is to be divided into equal pieces of 4.24 inches each. How many pieces of wire will there be? _____

LEARNING ACTIVITY SHEET 36--FINDING PERCENTS

UNIT VIII--PERCENTS

Directions: Work the following problems using percents.

1. 200% of 75 = _____
2. 15% of 325 = _____
3. 20% of 84 = _____
4. 10% of 2.40 = _____
5. 50% of 370 = _____
6. 25% of 1,928 = _____
7. 4% of 216 = _____
8. 3% of 45 = _____
9. 100% of 550 = _____
10. 12% of 144 = _____

METAL TRADES

LEARNING ACTIVITY SHEET 37--FINDING PERCENTS

UNIT VIII--PERCENTS

Directions: Answer each of the questions below by working the problems.

A. What is the percentage of the following numbers?

1. Wages for a first-year apprentice are 60% of those for a journeyman, and a journeyman's rate is $15.00 per hour. What does the apprentice make? _____

2. If a box of rivets sells for $6.20 each, and a 20% discount is allowed if purchased by 1/2 dozen, what is the net price for the 1/2 dozen? _____

3. Find the number of sheets of metal wasted if 5% of a total of 360 sheets is wasted. _____

B. Find what percent one number is of another.

4. A contractor figures a job at $1,550. If the profit amounts to $310, what is the percent of profit? _____

5. If 20 pipes of a total of 250 pipes are damaged, what percent is damaged? _____

6. John's weekly salary as a machinist is $250.00. It increased to $300 a week. What is the percent of increase? _____

C. Find the number when the percent of it is given.

7. Seventy-five percent of the sheets of metal were used. The number of sheets used was 150 sheets. How many sheets were there originally? _____

8. The interest on a sum of money borrowed for a year by a machinist is $65. If the rate of interest is 5%, how much is the sum of money?

9. The students sold 30% of the metal basketball hoops they made. The number of hoops sold was 12. How many basketball hoops did they make in all? _____

LEARNING ACTIVITY SHEET 38--MEASURING OBJECTS

UNIT IX--MEASUREMENT

Directions: Measure each of the objects listed below using your hand, a piece of string, a pencil, and a meter stick.

A.

	OBJECT	HAND	STRING	PENCIL	METER STICK
1.	height of work table				
2.	height of sheet of metal				
3.	length of steel pipe				
4.	length of band iron				
5.	depth of drip pan				
6.	diameter of a fan pulley				
7.	width of a square pipe				
8.	span of a roof				

B. Answer the following questions.

1. Do you feel we need some standard measuring unit so that we can all understand each other?

2. What are some standard measuring devices that we have?

METAL TRADES

LEARNING ACTIVITY SHEET 39--WHICH IS WHICH?

UNIT IX--MEASUREMENT

Directions: Put each of the following measures into the right category.

1. 42 inches
2. 9 cu.yds. of concrete
3. 1,450 sq. ft.
4. 39 meters
5. 82 centimeters
6. 72 yds.
7. 50 lbs. of nails
8. 2,540 sq. ft.
9. 12 cu. yds. of sand
10. 42 ft. of wire
11. 63 ft. of pipe
12. 55 degrees F.
13. 15 gals. of paint
14. 90 degrees F.
15. 1 pint of sealer
16. 4 grams of glue

VOLUME	LENGTH	AREA	WEIGHT	TEMPERATURE
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10				
11.				
12.				
13.				
14.				
15.				
16.				

LEARNING ACTIVITY SHEET 40--CHANGING MEASUREMENTS

UNIT IX--MEASUREMENT

Directions: Convert each of the following measurements. (To change to a larger unit, divide. To change to a smaller unit, multiply.)

MEASURES TO USE	(approximately)
3 ft. = 1 yard	39 in. = 1 meter
12 in. = 1 foot	2/5 in. = 1 centimeter (cm)
36 in. = 1 yard	1 meter = 1000 milimeters (mm)
	1 meter = 100 centimeters (cm)
	1 centimeter = 10 millimeters (mm)

1. 156 in. = _____ yards
2. 17 yds = _____ inches
3. 78 inches = _____ meters
4. 5 cm = _____ inches
5. 80 mm = _____ cm
6. 192 in. = _____ feet
7. 48 feet = _____ yards
8. 8 inches = _____ cm
9. 19 meters = _____ inches
10. 16 yards = _____ inches
11. 126 inches = _____ yards
12. 2.6 meters = _____ cm
13. 5.6 cm = _____ mm
14. 52 feet = _____ yards
15. 86 inches = _____ feet
16. 126 inches = _____ feet
17. 66 yards = _____ inches
18. 25 cm = _____ meters

19. 30 cm = _____ inches

20. 26 meters = _____ inches

LEARNING ACTIVITY SHEET 41--TERMS AND DEFINITIONS

UNIT IX--MEASUREMENT

Directions: Identify the parts of the circle below. Refer to Unit IX if necessary.

1. Arc--any part of the circumference of a circle between two points
2. Chord--a straight line connecting the two points on the circumference of a circle or the two ends of an arc
3. Semicircle--a half-circle
4. Tangent--a line that touches an arc or the circumference

A. _____

B. _____

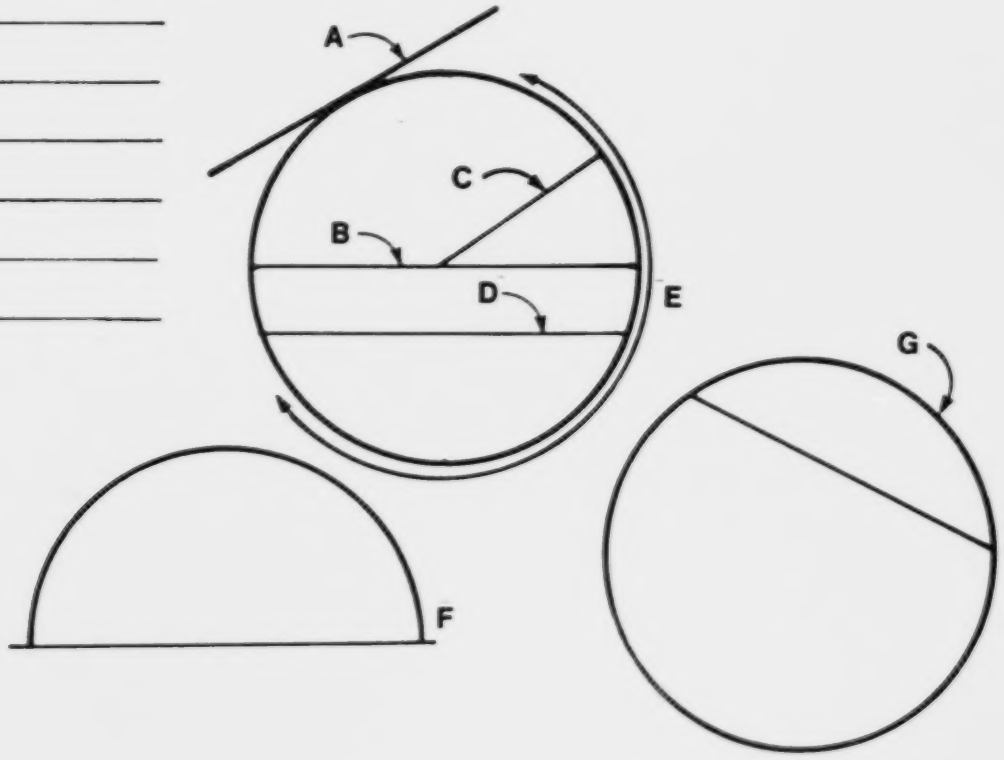
C. _____

D. _____

E. _____

F. _____

G. _____



* See Unit IX for additional terms and definitions.

METAL TRADES

LEARNING ACTIVITY SHEET 42--CIRCLES

UNIT IX--MEASUREMENT

Directions: Answer each of the following questions relating to the use of circles. Use the words below to complete the statements.

Semicircle	Radius	Tangent
Chord	Diameter	Circumference

A. Use a compass and a ruler to draw a circle with a diameter of 1½ inches.

B. What is the length of the radius of the circle? _____

C. Draw a line that is tangent to the circle.

D. Draw a line that is one inch long and a chord of the circle above.

E. A line through the center of a circle and touching both sides of the circle is called the _____.

F. A line from the center of the circle to one side is called the _____.

G. The distance around the outside edge of the circle is called the _____.

H. A line that touches two sides of a circle but does not go through the center is called a _____.

I. One-half of a circle is called a _____.

METAL TRADES

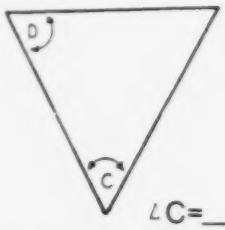
LEARNING ACTIVITY SHEET 43--ANGLES

UNIT IX--MEASUREMENT

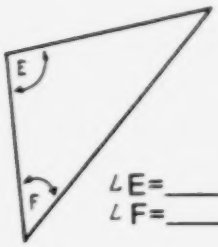
Directions: Measure the designated angles on each piece of material.

1.

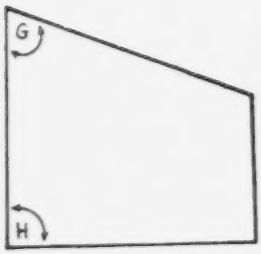
∠A=_____
∠B=_____

2. 

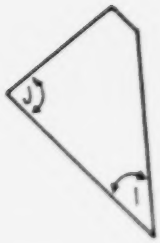
∠C=_____
∠D=_____

3. 

∠E=_____
∠F=_____

4. 

∠G=_____
∠H=_____

5. 

∠I=_____
∠J=_____

METAL TRADES

LEARNING ACTIVITY SHEET 44--WORKING WITH SHAPES

UNIT IX--MEASUREMENT

A. Cut the shapes below as indicated.

1. Cut this metal sheet into three pieces using parallel lines.

2. Cut this metal sheet into four pieces using intersecting lines that are perpendicular.

3. Cut this metal sheet into four pieces using perpendicular lines.

4. Cut this triangular aluminum sheet into two smaller triangular pieces which have right angles.

B. Label each die cutter piece as a rectangle, square, triangle, or circle.

1. _____ 2. _____ 3. _____

4. _____ 5. _____ 6. _____

METAL TRADES

LEARNING ACTIVITY SHEET 45--PERIMETERS

UNIT IX--MEASUREMENT

Directions: Find the perimeter of the following squares. The formula is P = 4s.

A. 1. How many feet of fence will it take to go around a yard if it is 35 feet on one side? _____

2. What is the perimeter of a patio that is 10 feet square? _____

B. What is the perimeter of the rectangles in the following problems. The formula is P = 2(L x W).

1. How many feet of baseboard would it take for a room that is 14' by 12'? _____

2. How many inches would it be around a tool box frame that is 16" by 20"? _____

C. Find the circumference of the following circles. $c = \pi d$, $\pi = 3.14$, d = diameter.

1. What is the circumference of a 2" water pipe? _____

2. What is the distance around a table that is 4 feet in diameter? _____

METAL TRADES

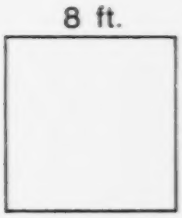
LEARNING ACTIVITY SHEET 46--AREA

UNIT IX--MEASUREMENT

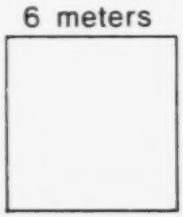
Directions: Find the area of the following.

(NOTE: To find the area of a square, the formula is $A = s^2$ or s x s (side x side).

A. 1.



2.

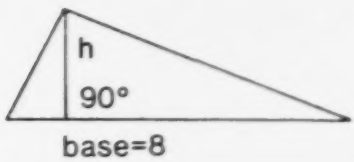


B. Find the area of the rooms (or rectangles) in the following problem. The formula for finding area of a rectangle is a = l x w (area = length x width)

1. How many sq. feet are in a building if the tool room is 10' long and 10' wide, the store room is 8' long and 6' wide, one locker room is 13' long and 11' wide, the second locker room is 14' long and 12' wide, and the office space is 16' long and 15' wide? _____

C. Find the area of the following triangles. The formula for finding the area of a triangle is ½(base x height).

h=4"



METAL TRADES

LEARNING ACTIVITY SHEET 47--VOLUME

UNIT IX--MEASUREMENT

Directions: Solve the following problems. You may refer to the following chart when answering the problems below.

1 gallon = 231 cubic inches
7½ gallons = 1 cubic foot
1 bushel = 1¼ cubic feet

1. What is the weight of a block of ice that is 2 feet long, wide, and thick? (Ice weighs 57 pounds per cubic foot)

   _____

2. What is the volume in cubic feet of a 90-gallon container?

   _____

3. How many bushels of scrap metal can be placed in a box having a volume of 34 cubic feet? _____

4. The length of a side of a square-based tank is 2 ft. 6 in., and the height is 4 feet. How many gallons of varsol will the tank hold? _____

5. How many gallons of oil can be put into a container having a volume of 4,851 cubic inches? _____

6. A water storage tank in the metal class has a diameter of 1 foot and a height of 5 feet. How many gallons of water will it hold? _____

METAL TRADES

LEARNING ACTIVITY SHEET 48--WORD PROBLEMS

UNIT IX--MEASUREMENT

Directions: Solve the following word problems.

1. A bulk of material weighs 120 oz. If it is sold for 78¢ a pound, what is the cost of the material? _____

2. Each 3¼" x ½" bolt weighs 2.7 ounces. Find the total weight of a box of 24 bolts. _____

3. How many 6-oz. packages of lighter plants can be made from a 12 pound bag? _____

4. A welder bought 2 lbs. & 10 oz. of brass rods from a 6-lb. 3-oz. box. how much material was left? _____

5. Each box of nuts weighs 2 lbs. 3oz. If a case contains 16 boxes, how much does the case weigh?

6. A ¾" drill bit weighs 12 oz. If Mr. Smith ordered 3 drill bits, and the shipping charge is 28¢ per pound, what will be the shipping charge? _____

METAL TRADES

LEARNING ACTIVITY SHEET 49--TEMPERATURES

UNIT IX--MEASUREMENT

Directions: 1. Find the results of the temperatures by using a Fahrenheit thermometer.

2. Find the results of the temperatures by using a Celsius thermometer.

3. Record your answers on the charts below.

A.	ORIGINAL TEMP.	DROP IN TEMP.	PRESENT TEMP.
Example:	45°F	31°F	14°F
1.	14°F	20°F	_____
2.	64°F	40°F	_____
3.	137°F	12°F	_____

	ORIGINAL TEMP.	RISE IN TEMP.	PRESENT TEMP.
Example:	20°F	31°F	51°F
4.	-10°F	16°F	_____
5.	- 1°F	4°F	_____
6.	4°F	12°F	_____

B. Find the results of the following temperatures by using a Celsius thermometer.

	ORIGINAL TEMP.	RISE OR DROP IN TEMP.	PRESENT TEMP.
7.	60°C	Rise 30°C	_____
8.	60°C	Rise 21°C	_____
9.	60°C	Drop 6°C	_____
10.	60°C	Drop 65°C	_____

METAL TRADES

LEARNING ACTIVITY SHEET 50--TIME

UNIT X--TIME AND PAY

Directions: Tell how many hours and minutes you worked from the problems below. You get one hour each day for lunch.

1. 8:10 - 5:10 _____

2. 8:00 - 5:05 _____

3. 8:15 - 4:30 _____

4. 7:55 - 4:35 _____

5. 8:25 - 5:30 _____